

THE SPHINGIDÆ OF SINGAPORE,

BY

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OR any one living in a place like Singapore, and who has any spare time on his hands, it is a great thing to have a hobby. It matters little what this hobby is, but for one whose business keeps him indoors most of the day as happens to many in this Colony, some hobby that will take them out of doors is the best. Such a one is the study of entomology, which has many advantages. It can be carried on at any time; it incurs little expense; it employs both mind and body; and opens up a large field for thought and investigation. This field as well as being large is exceedingly varied, and if worked systematically and scientifically will afford unending enjoyment to the student. In this paper I hope to give a brief sketch of what may be done in the near neighbourhood of Singapore in one branch only of this interesting science, namely, in the collection and study of the hawk moths.

All that is needed in the way of gear is a net, a killing bottle, a small pith-lined box and pins for collecting, and a few setting boards and store boxes for preserving the insects.

Our hunting ground is the nearest flower-bed, amongst the best flowers being honeysuckle, vinca and Barleria, and for humming birds lantana, papaw and the tembusu tree (*Fagrea peregrina*, Wall). Moth-catching may sound tame, but it is genuine sport, requiring a true and quick eye and ready hand, and often is quite exciting.

The *Sphingidæ*, or hawk moths, the finest and most interesting group of moths, are fairly well represented in the Island of Singapore. Like most moths they are crepuscular or nocturnal in their habits, few appearing before dusk.

Their flight is strong and swift, and the movement of the wings very rapid giving rise to a humming noise, which in the case of the humming bird hawks has given them their popular name.

As would be expected in swift-flying insects, their wings are long, narrow and pointed, with a strong rigid costa, and their bodies more or less fusiform, which renders their passage through the air more easy.

In all the hawks the proboscis is of great length, in order to enable them to reach the juice at the bottom of the long tubes of the flowers they frequent. In the green elephant (*Pergesa acteus*) this organ attains to $2\frac{1}{2}$ times the length of the body.

Each species has one or more favourite flowers which it frequents.

From sundown till dark—the humming birds appearing half an hour earlier—they may be seen darting from flower to flower and ever and anon pausing motionless but for the swift movement of the wings, which appear but as a shadow on each side before a flower from which, by means of their long slender proboscis they are drinking the nectar. They scarcely ever touch the flowers with their feet and never alight on them, but depend entirely on their wings for support. As soon as they have exhausted the supply of honey in one flower off they dart to another, where they repeat the same process.

Sphinx convolvuli has been known to come into a lighted room and go round to the flowers in vases drinking the honey.

Several species come to light and one or two are rarely taken any other way, for instance, the death's head and oleander. The latter has been taken in considerable numbers at the beam of a powerful electric light which was being worked in the neighbourhood of some jungle.

These moths probably play an important part in the fertilization of the plants they frequent.

Whether they remain on the wing all night is difficult to say. They appear to leave the flower-beds soon after dark, as they fill themselves very rapidly with honey. I have, how-

ever, taken *Diludia discistriga* at *Crinum asiaticum* as late as 10 p. m.

In the daytime they remain concealed amongst the foliage of trees and bushes. They are sometimes taken at rest on the trunks of trees or in corners of rooms whither they have probably been attracted by the light in the evenings. They seem to be very sensitive to the state of the weather and the moon and on moonlight nights few are to be seen at the flowerbeds. Fine evenings after rain are usually the most favourable for observing them.

Like many other insects these moths are liable to be attacked by a species of internal fungus.

Three at least of this family of moths—*Acherontia medusa*, *A. morta* and *Diludia discistriga*—make a squeaking sound.

It is noticeable that all the species taken in Singapore are larger than the same as given in MOORE'S "Lepidoptera of Ceylon," where most of them are described and figured.

The following is a list of the species recorded from Singapore:—

SUB-FAMILY—*Sphingidæ*.

Protoparce orientalis (*Sphinx convolvuli*).
Diludia discistriga.

SUB-FAMILY—*Acherontiinæ* (Death's heads).

Acherontia medusa.
A. morta.

SUB-FAMILY.—*Smerinthinæ*.

One or two species.

SUB-FAMILY.—*Chærocampinæ*.

Chærocampa celerio.
Chærocampa Silhetensis.
C. Rafflesi.
C. theylia.
C. Lucasii.
C. tenebrosa (?).
Pergesa acteus.

C. nessus.

Calymnia panopus.

And two or three other species probably new.

SUB-FAMILY.—*Macroglossinæ* (Humming birds).

Hemaris hylas.

M. luteata.

M. insipida.

The convolvulus hawk (*Sphinx convolvuli*) is the commonest. It may be taken at almost any season, but is more plentiful at some times than at others.

This moth may almost always be taken at honeysuckles and when *Faradaya papuana* is in flower one may be sure of obtaining large numbers at it. In fact they are so fond of it that I have taken as many as three at a single stroke of the net, and fifteen or twenty in one night is not an exceptional take. The caterpillar feeds on the Tembusu tree.

Diludia discistriga closely resembles the foregoing species in general appearance and habits, but is larger, darker and has no red on its body and does not fly quite so rapidly. It is not nearly so common as *S. convolvuli*. In fact, except at certain limited times, it is rare.

Next come the death's heads (*Acherontiinæ*) represented by two species. These are large handsome moths whose principal colouring consists of black and yellow. They are usually taken at light. I have not yet heard of their being taken at flowers.

By far the largest proportion of the species recorded from Singapore are comprised in the sub-family *Choerocampinæ*. The largest and one of the finest of this sub-family is *Calymnia panopus*, the female of which is over 6" in span.

Another beautiful member of this family is *Chærocampa nessus*, one of the handsomest hawks, its beautiful form and splendid green and golden orange tints rendering it conspicuous. The fore wings, dark green at the costal edge, shade off into the softest of browns, fawn and grey; the hind wings being deep glossy black contrasted with pale fawn. The abdomen is green down the centre of the back with a broad golden stripe down each side. The underside of the wings is

a beautiful combination of reds, yellows and greys, which almost rivals the autumn tints of the birch.

Then we have the beautiful *Celerio*, distinguished by its rows of silver spots down each side of the body. It is common on *Barleria flava* and *Vinca rosea* (Madagascar periwinkle).

Isopiles Rafflesii and *I. Theylia* resemble one another in general appearance, but *Theylia* is smaller and paler. These are common on *Barleria* and *Vinca*.

Pergesa acteus, more commonly known as the green elephant, is a beautiful insect. Its fore-wings are of a dark green colour. It is found on the same flowers as *Theylia* and *Celerio*.

Of the *Macroglossinæ* the most remarkable is *Hemaris hylas*, which frequents the coffee plantations, the larvæ feeding on the coffee tree, where it often does much damage. It has also been taken on lantana. The chief peculiarity of this moth is in its wings, which are quite transparent like those of a bee.

The other humming birds are most plentiful at lantana and the tembusu (*Fagraea peregrina*) when in flower. The male flowers of the papaw are also a great attraction. The members of this sub-family do not remain out after dark.

There is much yet to be found out as to the form and habits of the larvæ and pupæ of these moths, and there are probably new species to be found and described, so that there is ample scope, for any one taking up the subject to add to what is already known.